THE INVENTION CLAIMED IS:

1. A scheduler for a network processor, the scheduler including a scheduling queue in which weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

wherein the scaling factor SF is adjusted depending on a result of comparing the distance D to the range R.

2. The scheduler of claim 1, wherein SF is increased if D > R.

3. The scheduler of claim 2, wherein SF is increased if D exceeds R in regard to a predetermined number of calculations of D.

4. The scheduler of claim 1, wherein SF is decreased if D < R/2.

5. The scheduler of claim 4, wherein SF is decreased if D is less than one-half R in regard to a predetermined number of calculations of D.

6. The scheduler of claim 1, wherein SF = 2^n, n being a positive integer.

7. A scheduler of claim 6, wherein n is incremented to adjust SF.

8. The scheduler of claim 6, wherein n is decremented to adjust SF.

9. A method of managing a scheduling queue in a scheduler for a network processor, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the method comprising:

calculating the distance D with respect to a particular flow to be enqueued;

comparing the distance D to the range R; and

adjusting the scaling factor SF based on a result of the comparing step.

10. The method of claim 9, wherein the scaling factor SF is increased if the comparing step determines that D > R.

11. The method of claim 9, wherein the scaling factor SF is decreased if the comparing step determines that $D < R/2$.

12. The method of claim 9, wherein $SF = 2^n$, n being a positive integer, and the adjusting step includes incrementing or decrementing n.

13. A method of managing a scheduling queue in a scheduler for a network processor, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula $D = ((WF \times FS)/SF)$, where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the method comprising:

calculating the distance D with respect to a particular flow to be enqueued;

comparing the distance D to the range R;

incrementing a counter if the comparing step determines that $D > R$; and

increasing SF if the incremented counter exceeds a threshold.

14. The method of claim 13, wherein $SF = 2^n$, n being a positive integer, and the increasing step includes incrementing n.

15. A method of managing a scheduling queue in a scheduler for a network processor, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the method comprising:

calculating the distance D with respect to a particular flow to be enqueued;

comparing the distance D to the range R;

incrementing a counter if the comparing step determines that D < R/2; and

decreasing SF if the incremented counter exceeds a threshold.

16. The method of claim 15, further comprising:

clearing the counter if the comparing step determines that D > R/2.

17. The method of claim 15, wherein SF = 2^n, n being a positive integer, and the decreasing step includes decrementing n.

18. A method of managing a scheduling queue in a scheduler for a network processor, the scheduling queue

having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the method comprising:

calculating the distance D with respect to a particular flow to be enqueued;

comparing the distance D to the range R;

incrementing a first counter if the comparing step determines that D > R;

increasing SF if the incremented first counter exceeds a first threshold;

incrementing a second counter if the comparing step determines that D < R/2; and

decreasing SF if the incremented second counter exceeds a second threshold.

19. The method of claim 18, further comprising:

clearing the second counter if the comparing step determines that D > R/2.

20. The method of claim 18, wherein SF = 2^n, n being a positive integer, the increasing step includes incrementing n, and the decreasing step includes decrementing n.

21. A method of managing a scheduling queue in a scheduler for a network processor, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the method comprising:

calculating the distance D with respect to a particular flow to be enqueued;

comparing the distance D to the range R; and

increasing SF if the distance D exceeds the range R.

22. A method of managing a scheduling queue in a scheduler for a network processor, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the method comprising:

calculating the distance D with respect to a particular flow to be enqueued;

comparing the distance D to the range R;

increasing SF if the distance D exceeds the range R;

incrementing a counter if the comparing step determines that D < R/2; and

decreasing SF if the incremented counter exceeds a threshold.

23. A scheduler for a network processor, the scheduler including:

a scheduling queue in which weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

wherein the scheduler is adapted to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increment a counter if the comparison of the distance D to the range R determines that D > R; and

increase SF if the incremented counter exceeds a threshold.

24. A scheduler for a network processor, the scheduler including:

a scheduling queue in which weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

wherein the scheduler is adapted to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increment a counter if the comparison of the distance D to the range R determines that D < R/2; and

decrease SF if the incremented counter exceeds a threshold.

25. A scheduler for a network processor, the scheduler including:

a scheduling queue in which weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

wherein the scheduler is adapted to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increment a first counter if the comparison of the distance D to the range R determines that D > R;

increase SF if the incremented first counter exceeds a first threshold;

increment a second counter if the comparison of the distance D to the range R determines that D < R/2; and

decrease SF if the incremented second counter exceeds a second threshold.

26. A scheduler for a network processor, the scheduler including:

a scheduling queue in which weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

wherein the scheduler is adapted to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R; and

increase SF if the distance D exceeds the range R.

27. A scheduler for a network processor, the scheduler including:

a scheduling queue in which weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

wherein the scheduler is adapted to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increase SF if the distance D exceeds the range R;

increment a counter if the comparison of the distance D to the range R determines that D < R/2; and

decrease SF if the incremented counter exceeds a threshold.

28. A computer program product for use with a scheduler for a network processor, the scheduler including:

a scheduling queue in which weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the computer program product comprising:

a medium readable by a computer, the computer readable medium having computer program code adapted to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increment a counter if the comparison of the distance D to the range R determines that D > R; and

increase SF if the incremented counter exceeds a threshold.

29. A computer program product for use with a scheduler for a network processor, the scheduler including:

a scheduling queue in which weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the computer program product comprising:

a medium readable by a computer, the computer readable medium having computer program code adapted to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increment a counter if the comparison of the distance D to the range R determines that D < R/2; and

decrease SF if the incremented counter exceeds a threshold.

30. A computer program product for use with a scheduler for a network processor, the scheduler including:

a scheduling queue in which weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the computer program product comprising:

a medium readable by a computer, the computer readable medium having computer program code adapted to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increment a first counter if the comparison of the distance D to the range R determines that D > R;

increase SF if the incremented first counter exceeds a first threshold;

increment a second counter if the comparison of the distance D to the range R determines that D < R/2; and

decrease SF if the incremented second counter exceeds a second threshold.

31. A computer program product for use with a scheduler for a network processor, the scheduler including:

a scheduling queue in which weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

adjust the scaling factor SF based on a result of the comparison of the distance D to the range R.

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the computer program product comprising:

a medium readable by a computer, the computer readable medium having computer program code adapted to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R; and

increase SF if the distance D exceeds the range R.

32. A computer program product for use with a scheduler for a network processor, the scheduler including:

a scheduling queue in which weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the computer program product comprising:

a medium readable by a computer, the computer readable medium having computer program code adapted to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increase SF if the distance D exceeds the range R;

increment a counter if the comparison of the distance D to the range R determines that D < R/2; and

decrease SF if the incremented counter exceeds a threshold.

33. A computer program product for use with a scheduler for a network processor, the scheduler including:

a scheduling queue in which weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the computer program product comprising:

a medium readable by a computer, the computer readable medium having computer program code adapted to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R; and